REMARKS

Claims 1-30 are pending. By this Amendment, claims 1, 6, 10 and 19 are amended. No new matter is added. Claim 1 is amended to clarify that the various surfaces are part of the sealing member and to change "resilient means" to "resilient element" to even more clearly distinguish over the references.

I. Allowable Subject Matter

The Office Action indicates that claims 23, 24 and 27 contain allowable subject matter and would be allowable if rewritten in independent including all of the features of the base claim and any intervening claims. Applicant appreciates this indication of allowability and submits that all pending claims are allowable.

II. §102(b) Rejection of Claims 1, 6, 7, 11-15, 17-19, 22, 26 and 30 over Macks

The Office Action rejects claims 1, 6, 7, 11-15, 17-19, 22, 26 and 30 under 35 U.S.C. §102(b) over Macks, U.S. Patent No. 2,964,339. The rejection is respectfully traversed.

Macks fails to disclose or suggest that during operation both the radial force induced on the sealing member by fluid flowing axially into and circumferentially over the radially inner surface and the axial force induced on the sealing member because of a pressure difference across the sealing member is resisted by a resilient element, as recited in claim 1. That is, Macks does not disclose or suggest the claim 1 resilient element that resists both radial and axial forces acting on the sealing member.

Macks discloses a plurality of tension members 64 disposed around a ring 60 and affixed between a housing 12 and the ring 60 (Fig. 9; col. 6, lines 58-60). The tension members 64 have "the purpose of restraining the ring 60 against movement which would be caused by the pressure differential across the ring" (col. 6, lines 60-62). Thus, the tension members 64 prevent movement (of the ring 60) axially of the shaft 14. The tension members 64 may take the form of wires or chains (col. 6, lines 62 and 63). The Office Action asserts

that because the wires may be metal, they have an inherent degree of resiliency and stiffness, and therefore would naturally resist some radial movement. However, Macks explicitly teaches that the tension members 64 do "not restrain the ring 60 against movement in the radial direction" (col. 6, lines 64 and 65, emphasis added). Thus, Macks clearly teaches that the tension members 64 do not resist radial forces acting on the sealing member. The Office Action's assertion is baseless and contrary to the explicit disclosure of the reference.

The Office Action further asserts that the wires (tension members 74 in Fig. 10) are configured to maintain a constant clearance between the seal and the shaft 14 (col. 7, line 10), and therefore provide enough resiliency to allow and maintain a constant clearance in a manner that is allegedly similar to Applicant's claimed resilient element. However, Macks discloses, in col. 7, lines 6-10, "[t]the wires 74 function to carry the load imposed on the ring 66 in the axial direction . . . . The wires 74 may be of any type of flexible tension material since it is desired to maintain the position of the ring 66," which relates to axial, not radial position. Macks continues, in col. 7, lines 10-13, "while allowing the hydrodynamic film to carry the ring 66 relative to the shaft 14 and maintain a constant clearance therebetween." Thus, in Macks, it is the hydrodynamic film which maintains the constant clearance, not the tension members. Thus, Macks explicitly discloses that the tension members 64 resist axial but not radial forces.

The Office Action's assertion that Applicant's claim language is met if "any resistance" of is provided by the wires is irrelevant, as Macks explicitly teaches that the tension members 64 do "not restrain the ring 60 against movement in the radial direction" (col. 6, lines 64 and 65). Further, the amendment to claim 1 renders moot the assertion that the claimed resilient means reads on both the wires 74 and the diaphragm 62, 70. Although the wires 74 and diaphragm 62, 70 of Macks each are resilient, neither one of them is a resilient element that resists axial and radial movement as claimed.

Because claims 6, 7, 11-15, 17-19, 22, 26 and 30 incorporate the features of claim 1, these claims also are patentable over Macks. Thus, it is respectfully requested that the rejection be withdrawn.

III. §102(b) Rejection of Claims 1, 2, 4-14, 16, 17, 19, 22, and 28-30 over Gardner

The Office Action rejects claims 1, 2 4-14, 16, 17, 19, 22 and 28-30 under 35 U.S.C. §102(b) over Gardner, U.S. Patent No. 5,632,493. The rejection is respectfully traversed.

Gardner also fails to disclose or suggest the claim 1 resilient element that resists both radial and axial forces acting on the sealing member. Gardner, discloses members 100 that resist radial forces and not axial forces, and a sealing member finger 160 which resists axial forces, but not radial forces. The Office Action asserts that the members 100 are fixed to the sealing member 160 at a wall 50, and thus function as a resilient means resisting both axial and radial forces. However, the sheet members 110, 120 which make up part of the members 100 are not fixed to the finger 160, but instead merely act upon the finger 160 in a radial direction (col. 5, lines 30-46). Thus, axial movement is resisted by the fingers 160, not the sheet members 110, 120. Therefore, Gardner does not disclose or suggest a resilient element which resists both axial and radial forces on the sealing member.

The Office Action cites Herron et al. (Herron), U.S. Patent No. 6,527,274, as providing additional support that the means in Gardner is configured to counter radial and axial pressures (col. 4, lines 5-17). Herron discloses a leaf spring sealing assembly 18 having a sealing portion 24, a primary spring segment 20 and a backing spring segment 30 (Fig. 1). However, the backing spring segment 30 is required to maintain stability of the seal (see e.g., col. 4, lines 15-17). Thus, the primary spring segment 20 is for resisting axial loads and the backing seal segment 30 is for resisting radial loads, or else there would be no need for the backing seal segment 30. Thus, Herron does not support the Office Action's position.

Because claims 2, 4-14, 16, 17, 19, 22 and 28-30 incorporate the features of claim 1, these claims are also patentable over Gardner. Thus, it is respectfully requested that the rejection be withdrawn.

IV. §103(a) Rejections of Claims 3, 20, 21, and 25

The Office Action rejects claim 3 under 35 U.S.C. §103(a) over Gardner; rejects claims 20 and 21 under 35 U.S.C. §103(a) over Macks in view of Strub, U.S. Patent No. 3,756,673; and rejects claim 25 under 35 U.S.C. §103(a) over Macks. The rejections are respectfully traversed. Claims 3, 20, 21 and 25 are patentable for at least the reasons set forth above for claim 1. Withdrawal of the rejection is requested.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-30 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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